

Appendix G: Erlang tables

Table G-1, Grade of service and traffic formula, summarizes the Grade of Service and the formula used in the traffic calculations. If the traffic model is non-blocking, then the Erlang-C formula would be used. For blocking calculations, the Erlang-B formula would be used.

Table G-1
Grade of service and traffic formula

Port Type	Selection	GOS	Traffic Formula	Refer to:
Voice	ACD/Meridian (8 Meg Card Option)	P.05	Erlang-C	Table G-2, Erlang-C traffic capacity (ccs) at P.05 for ACD (8 meg card option)
Voice	ACD/Meridian Mail	P.05	Erlang-C	Table G-3, Erlang-C traffic capacity (ccs) at P.05 for ACD
Voice	UCD/MSM	P.05	Erlang-C	Table G-4, Erlang-C traffic capacity (ccs) at P.05 for UCD/MSM
Voice	MLHG (DMS-10)	P.02	Erlang-B	Table G-6, Fax GOS for P.05 Erlang-C

Table G-1
Grade of service and traffic formula (Continued)

Port Type	Selection	GOS	Traffic Formula	Refer to:
Fax	Call Back	P.05	Erlang-C	Table G-6, Fax GOS for P.05 Erlang-C
Fax	Same Call	P.02	Erlang-B	Table G-6, Fax GOS for P.05 Erlang-C

The following tables give the traffic intensity which can be supported by a given number of channels for a given average session length or hold time of the port. Where an Erlang-C table is indicated, the calculations are based on a five percent probability of delay of over one 6-second ring cycle. The results in an Erlang-C calculation depend only on the ratio of the tolerable delay to the total hold time. Thus for an average session length of 120 seconds, this ratio would be 0.05. The ratio is indicated by r in the tables.

Table G-2
Erlang-C traffic capacity (ccs) at P.05 for ACD (8 meg card option)

No. of Ports	60s sessions r=0.1	120s sessions r=0.05	180s sessions r=0.03	300s sessions r=0.02
2	13.5	12.9	12.7	12.5
4	51.5	49.5	48.7	48.3
6	98.7	94.9	93.4	92.7
8	150.5	144.9	142.7	141.6
10	205.3	197.9	194.9	193.3
12	262.2	252.9	249.1	247.2

Table G-3
Erlang-C traffic capacity (ccs) at P.05 for ACD

No. of Ports	60s sessions r=0.1	120s sessions r=0.05	180s sessions r=0.03	300s sessions r=0.02
4	51.5	49.5	48.7	48.3

Table G-3
Erlang-C traffic capacity (ccs) at P.05 for ACD (Continued)

No. of Ports	60s sessions r=0.1	120s sessions r=0.05	180s sessions r=0.03	300s sessions r=0.02
8	150.5	144.9	142.7	141.6
12	262.2	252.9	249.1	247.2
16	380.4	367.4	362.0	359.2
20	502.6	486.0	478.9	475.3
24	627.7	607.4	598.7	594.3
28	754.9	731.1	720.8	715.5
32	883.8	856.5	844.5	838.3
36	1014.0	983.2	969.7	962.6
40	1145.4	1111.2	1096.0	1088.1
44	1277.6	1240.1	1223.4	1214.6
48	1410.7	1369.9	1351.6	1342.0
52	1544.5	1500.5	1480.6	1470.1
56	1678.9	1631.7	1610.2	1598.9
60	1813.8	1763.5	1740.5	1728.3
64	1949.2	1895.8	1871.3	1858.2
68	2085.0	2028.7	2002.5	1988.7
72	2221.2	2161.9	2134.3	2119.5
76	2357.8	2295.6	2266.4	2250.8
80	2494.7	2429.6	2398.9	2382.5
84	2631.9	2563.9	2531.8	2514.5
88	2769.4	2698.6	2665.0	2649.9
92	2907.1	2833.6	2798.0	2779.5
96	3045.0	2968.8	2932.2	2912.5

Table G-4
Erlang-C traffic capacity (ccs) at P.05 for UCD/MSM

Number of Ports	60s sessions r=0.1	120s sessions r=0.05	180s sessions r=0.03	300s sessions r=0.02
4	44.3	42.6	41.9	41.5
8	129.4	124.7	122.7	121.7
12	225.5	217.5	214.2	212.6
16	327.1	316.0	311.3	308.9
20	432.2	417.9	411.9	408.8
24	539.8	522.4	514.9	511.1
28	649.2	628.7	619.9	615.3
32	760.1	736.5	726.3	721.0
36	872.1	845.6	833.9	827.9
40	985.0	955.6	942.6	935.8
44	1098.8	1066.5	1052.1	1044.6
48	1213.2	1178.1	1162.4	1154.1
52	1328.3	1290.4	1273.3	1264.3
56	1443.8	1403.3	1384.8	1375.0
60	1559.9	1516.6	1496.8	1486.3
64	1676.3	1630.4	1609.3	1598.1
68	1793.1	1744.6	1722.2	1710.2
72	1910.3	1859.2	1835.5	1822.8
76	2027.7	1974.2	1949.1	1935.7
80	2145.4	2089.4	2063.1	2049.0
84	2263.4	2205.0	2177.3	2162.5
88	2381.7	2320.8	2291.9	2276.3
92	2500.1	2436.9	2406.7	2290.4

Table G-4**Erlang-C traffic capacity (ccs) at P.05 for UCD/MSM (Continued)**

Number of Ports	60s sessions r=0.1	120s sessions r=0.05	180s sessions r=0.03	300s sessions r=0.02
96	2618.7	2553.2	2521.7	2504.7

Table G-5**Erlang-B Traffic capacity (CCS) at P.02 (DMS-10 MLHG)**

Channels	4	8	12	16	20	24	28	32
Traffic(CCS)	39	131	238	354	475	599	725	854

Channels	36	40	44	48	52	56	60	64
Traffic(CCS)	39	131	238	354	475	599	725	854

Channels	68	72	76	80	84	88	92	96
Traffic(CCS)	984	219 7	233 5	247 3	261 1	275 0	288 9	302 8

Table G-6
Fax GOS for P.05 Erlang-C

Number of Fax Ports	(CCS - P.05)
2	12.7
3	29.1
4	48.7
5	70.3
6	93.4
7	117.6
8	142.7
10	194.9
12	249.1
14	304.9
15	333.3
16	362.0

When the application is running, the fax delivery report can be periodically monitored to see if the actual wait times are within the desired limits.

Tables have been generated for fax session lengths of 234 seconds (3.9 minutes). The tables indicate the traffic which can be handled by a given number of multi-media ports.

Note: An analysis was done for fax session length and number of pages in each fax at the TOR site (for MM9). The average session length was 234 seconds and the average number of pages in each fax was 4.8. These figures were considered a useful starting point for the fax traffic tables.

Table G-7
Fax GOS for P.02 Erlang-B

Number of Fax Ports	Busy Hour Traffic (CCS - P.02)
2	8
3	21.5
4	38.9
5	59.1
6	81.1
7	104.6
8	129.3
10	181.2
12	235.7
14	292.2
15	322.1
16	350.3